APPENDIX D

SWPPP

PRELIMINARY
STORMWATER POLLUTION PREVENTION PLAN

for

Equestrian Estates
Red Schoolhouse Road (CR 41)
Village of Chestnut Ridge, New York

Prepared For:

Equestrian Estates
188 21st Street
Brooklyn, New York 11232

Prepared By:

Langan Engineering, Environmental, Surveying
Landscape Architecture and Geology, D.P.C.
1 North Broadway, Suite 910
White Plains, New York 10601

September 24, 2018
Revised December 8, 2020
Revised March 11, 2021

LANGAN

Project No.: 190044901

Preparer of the SWPPP

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the SPDES General Permit for Stormwater Discharges from Construction Activity. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil or administrative proceedings.

Name: Michael Finan, PE

Date: March 11, 2021

Table of Contents

Table of Contents

Tables

Figures

Appendices

1 Executive Summary

This Preliminary Stormwater Pollution Prevention Plan (SWPPP) and accompanying project plans have been prepared in accordance with the New York State Department of Environmental Conservation (NYSDEC) State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity (General Permit) latest revision, the *New York State Stormwater Management Design Manual* (*Design Manual*) latest revision, and the *New York State Standards and Specifications for Erosion and Sediment Control* latest revision. The Applicant, Equestrian Estates, is proposing to develop a 39.6 acre property at Red Schoolhouse Road (CR 41), in the Village of Chestnut Ridge, New York. The project, Equestrian Estates, is a mixed use development that consists of 2 mixed use buildings (buildings A1 and A2), 2 senior housing buildings (buildings B1 and B2), 31 two-unit townhomes, a clubhouse, and amenities and 2 single family lots. The project will maintain existing drainage patterns as much as practical, control the rate of stormwater runoff resulting from the development, and mitigate potential impacts on water quality and erosion generated during and after construction.

The pre- and post-development conditions were analyzed using the USDA Soil Conservation Service Publication Technical Release (TR-55) "Urban Hydrology for Small Watersheds." TR-55 provides procedures for estimating runoff and peak discharges in small watersheds based upon the watershed areas, land coverage, soil group types, curve numbers (CN), times of concentration (Tc), rainfall distribution type, and rainfall amount for the design storm events. The pre- and post-development peak discharge rates of runoff have been evaluated utilizing stormwater modeling software. An overall comparison of the pre- and post-development peak discharge rates for each of the design storms analyzed is provided in the table below.

Table 1-1: Overall Comparison of Pre- & Post-Development Peak Discharge Rates

Storm Event	Pre (cfs)	Post (cfs)	Diff (cfs)
1-year	53.42	38.21	-15.21
2-year	78.34	62.57	-15.77
10-year	151.40	132.90	-18.50
25-year	211.45	186.59	-24.86
100-year	334.66	293.80	-40.86

The above comparison demonstrates that the peak rate of runoff from the site will not be increased as a result of the proposed development. In addition, the erosion control, sediment control, pollution-prevention, and stormwater management measures to be implemented during construction as outlined in this SWPPP and project drawings will minimize soil erosion and control sediment transport off site, and after construction will control the water quality and quantity of stormwater runoff.

2 Project Information

2.1 Project Summary

The Applicant is proposing to develop a property in the Village of Chestnut Ridge, New York (see Figure 1). Below is a summary of the project information:

Table 2-1: Project Summary

Project Name:	Equestrian Estates
Project Location:	Red Schoolhouse Road (CR 41) Village of Chestnut Ridge, New York
Property Tax ID No.:	Section 68.09 Block 2 Lots 9, 10, 11, 12, and 22 Section 68.13 Block 1 Lot 6
Property Acreage:	±39.6 acres (total)
Municipality:	Village of Chestnut Ridge, which is not an municipal separate storm sewer system (MS4)
Project Description:	Mixed use development that consists of 2 mixed use buildings, 31 two-unit townhomes, 2 senior housing buildings, 2 single family lots, a clubhouse, and amenities
Estimated Disturbed Area:	31.6 acres, which does require coverage under the SPDES General Permit
Existing Site Conditions:	Woods (fair condition), grass (fair condition), impervious area (gravel, pavement, buildings) 3.5 acres of existing impervious area
Proposed Site Conditions:	Woods (fair condition), grass (fair condition), grass (good condition), impervious area (gravel, pavement, buildings) 13.8 acres of proposed impervious area
Stormwater Management Practices:	Bioretention Dry Detention Basins Underground Stormwater Chambers
Construction Duration:	Site Work and Infrastructure Installation: from spring 2022 to spring 2024, including planned winter shutdowns.

2.2 Project Description

The project site is a mixture of developed and undeveloped parcels. Presently, there is a commercial building with associated parking and residential homes on some of the parcels that make up the project site. The existing ground cover is mostly wooded with impervious (i.e., gravel, pavement, buildings) and fair grass. The slopes are between 1 and greater than 25 percent. Two wetlands and one stream were identified within the total property area.

Equestrian Estates is a mixed use development that consists of 2 mixed use buildings, 31 two-unit townhomes, 2 senior housing buildings, 2 single family lots, a club house, pools, tennis court, and associated parking. The mixed use buildings will have retail on the first floor and residential apartments on the upper floors. Access to the development will be provided from

Red Schoolhouse Road and Loescher Lane. Improvements to Loescher Lane include widening the existing driveway from 18 feet to 24 feet to allow for two-way traffic.

Coverage under the New York State Department of Environmental Conservation (NYSDEC) State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity (General Permit) latest revision will be required (see Appendix A), since the project involves soil disturbance of 1 or more acres. The Notice of Intent (NOI) form will be submitted to the NYSDEC before construction begins to obtain coverage under the SPDES General Permit. The form has been provided in Appendix B.

3 Site Conditions

3.1 Soils

The United States Department of Agriculture (USDA) Soil Conservation Service Soil Survey for Rockland County has been reviewed. The surficial soil conditions are shown in Figure 2 and are summarized in the table below.

Table 3-1: USDA Soil Data

Map Symbol	Description	Depth to Groundwater (ft)	Depth to Bedrock (in)	Hydrologic Soil Group
WeB	Wethersfield gravelly silt loam, 3 to 8 percent slopes	1.5 – 2.5 (Feb – Apr)	>60	C
WeC	Wethersfield gravelly silt loam, 8 to 15 percent slopes	1.5 – 2.5 (Feb – Apr)	>60	C
WeD	Wethersfield gravelly silt loam, 15 to 25 percent slopes	1.5 – 2.5 (Feb – Apr)	>60	C
WuB	Wethersfield-Urban land complex, 2 to 8 percent slopes	1.5 – 2.5 (Feb – Apr)[1]	>60[2]	C[3]

1. The depth to groundwater is not provided for the Urban land component. The depth to groundwater is assumed to be the same as the Wethersfield component.
2. The depth to bedrock is not provided for the Urban land component. The depth to bedrock is assumed to to be the same as the Wethersfield component.
3. A hydrological soil group is not given for the Urban land component. The hydrological soil group is assumed to be the same as the Wethersfield component.

The Soil Conservation Service defines the hydrologic soil groups as follows:

- **Type A Soils**: Soils having a high infiltration rate and low runoff potential when thoroughly wet. These soils consist mainly of deep, well-drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

- **Type B Soils**: Soils having a moderate infiltration rate when thoroughly wet. These soils consist mainly of moderately deep to deep, moderately well to well-drained soils with moderately fine to moderately course textures. These soils have a moderate rate of water transmission.

- **Type C Soils**: Soils having a low infiltration rate when thoroughly wet. These soils consist mainly of soils with a layer that impedes downward movement of water, and

soils with moderately fine to fine texture. These soils have a low rate of water transmission.

- **Type D Soils**: Soils having a very low infiltration rate and high runoff potential when thoroughly wet. These soils consist mainly of clays that have high shrink-swell potential, soils that have a permanent high water table, soils that have a clay pan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very low rate of water transmission.

3.2 Water Resources

Two wetlands and one stream were identified within the total property area, which were identified and flagged by Tim Miller Associates. The wetlands are identified on the plans as wetlands A and F. Wetland A is located along a portion of the stream and wetland F is located in the southeastern corner of the property adjacent to Gary Lane and S Pascack Road.

The stream begins at the outfall of the drainage system on Red Schoolhouse Road. The stream crosses under the existing driveway and traverses around the existing commercial property to an outfall at the eastern property line. The stream discharges to the Pascack Brook. The stream is classified by the NYSDEC as a Class C waterbody. Although classified by the NYSDEC, Class C waterbodies are not regulated by the NYSDEC and are not required to have a 50 foot NYSDEC setback. According to the NYSDEC environmental resource mapper, the Pascack Brook and tributaries within New York are 303(d) listed waterbodies.

Aquifer mapping was reviewed to determine whether the site is over a sole source, primary or principal aquifer. According to the Environmental Protection Agency "Sole Source Aquifers" map, the site is not over a sole-source aquifer. According to the NYSDEC "Primary and Principal Aquifers in New York State" map, the site is not over a primary aquifer or a principal aquifer.

3.3 Floodplains

The Flood Insurance Rate Map (FIRM) Community Panel Number 36087C0158G with an effective date of March 3, 2014 was reviewed. According to Panel 158 of 207, the property is within other areas Zone X (see Figure 3). Zone X is defined as "areas determined to be outside the 0.2% annual chance floodplain."

3.4 Cultural Resources

According to the New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP) Cultural Resource Information System (CRIS), the property is not within an archaeological sensitive area; not listed or eligible for listing on the state or national registers of historic places; and not adjacent to a place listed or eligible for listing on the state or national registers of historic places (see Figure 4).

4 Stormwater Management Plan

Stormwater management facilities will be implemented to detain, treat, and release stormwater runoff at a rate equal to or less than what existed prior to construction of the project. This will be achieved through the use of Best Management Practices (BMP) and Green Infrastructure Practices. Hydrodynamic separators will be used for pretreatment and bioretention and underground infiltration systems will be used for treatment. The stormwater management facilities will be designed in accordance with the Design Manual.

4.1 Process for Stormwater Site Planning and Practice Selection Compliance

4.1.1 Site Planning

Preservation of Natural Features and Conservation

Preservation of natural features includes techniques to identify and preserve natural areas that can be used to protect water, habitat and vegetative resources. Conservation includes designing elements of the development in a way that the site design takes advantage of a site's natural features, preserves sensitive areas and identifies constraints and opportunities to prevent or reduce negative effects of a development. An evaluation of the preservation of natural features and conservation planning practices is provided in the table below.

Table 4-1: Preservation of Natural Features and Conservation

Practice	Applied	Site Limitations
Preservation of Undisturbed Areas	No	The majority of the wetlands will remain undisturbed; however, the areas will not be placed into permanent conservation easements.
Preservation of Buffers	N/A	There are no buffers required for the wetlands or stream.
Reduction of Clearing and Grading	Yes	None. The clearing and grading were limited to the minimum amount needed for roads, driveways, foundations, utilities, and stormwater management practices.
Locating Development in Less Sensitive Areas	No	Steep slopes and wetlands were avoided as much as possible; however, the project will result in disturbances in these areas.
Open Space Design	N/A	Clustering, conservation design or open space design is not applicable to this type of development.

Reduction of Impervious Cover

Reduction of impervious cover includes methods to reduce the amount of rooftops, parking lots, roadways, sidewalks, and other surfaces that do not allow rain to infiltrate into the soil. An evaluation of the reduction of impervious cover techniques is provided in the table below.

Table 4-2: Reduction of Impervious Cover

Practice	Applied	Site Limitations
Roadway Reduction	No	Given the site topography and required connection points,

Practice	Applied	Site Limitations
		the roadway lengths and widths could not be minimized.
Sidewalk Reduction	Yes	None. The sidewalk lengths and widths have been minimized to reduce the amount of impervious area.
Driveway Reduction	Yes	None. The driveway lengths have been minimized to reduce the amount of impervious area.
Cul-de-sac Reduction	N/A	This does not apply to this project.
Building Footprint Reduction	Yes	None. The multi-use buildings reduce the footprint of the buildings by going taller while maintaining the same floor to area ratio.
Parking Reduction	No	Although shared parking is proposed, additional parking spaces were provided since the end user of the pad site is currently unknown.

Runoff Reduction Techniques

Green infrastructure techniques use the natural features of the site and promote runoff reduction through micromanaging runoff, promoting groundwater recharge, increasing losses through evapotranspiration, and emulating the existing hydrology. An evaluation of the runoff reduction practices is provided in the table below.

Table 4-3: Runoff-Reduction Practices

Practice	Applied	Site Limitations
Conservation of Natural Areas	No	Areas will be conserved; however, they do not meet the conservation of natural area requirements.
Sheet flow to Riparian Buffers or Filter Strips	N/A	There are no buffers and the site slopes do not meet the filter strip requirements.
Vegetated Open Swale	No	Vegetated swales will not meet the vegetated open swale requirements due to the existing topography.
Tree Planting/Tree Box	Yes	None.
Disconnection of Rooftop Runoff	No	The site slopes do not meet the disconnection of rooftop runoff requirements.
Stream Daylighting for Redevelopment Projects	N/A	Not applicable to this project.
Rain Garden	No	Bioretention practices will be used given the amount of impervious area to be treated.
Green Roof	No	The building roof lines do not allow for the incorporation of green roofs.
Stormwater Planter	No	Bioretention practices will be used given the amount of impervious area to be treated.
Rain Tank/Cistern	No	Bioretention practices will be used given the amount of impervious area to be treated.
Porous Pavement	No	Bioretention practices will be used given the amount of impervious area to be treated.

4.1.2 Water Quality Treatment Volume Determination

The total required water quality volume was determined by totaling the individual water quality volumes for each of the subcatchments that contributed to a stormwater management system and excluding the subcatchments that were diverted from the proposed development and

stormwater management systems. The water quality volume was determined based on the methodology as described in the Design Manual. The total required water quality volume detailed design calculations are provided in Appendix E.

4.1.3 Runoff Reduction Volume Determination

In addition to the applied runoff reduction techniques described previously, standard stormwater management facilities with runoff reduction capacity were used to reduce the total water quality volume. After applying the runoff-reduction-volume techniques, the total required water quality volume was not reduced 100 percent. The minimum required runoff reduction volume was determined to verify that at least the minimum percent of the total water quality volume has been reduced. The total provided runoff reduction volume was greater than the minimum required runoff reduction volume. Therefore, the minimum required runoff reduction volume has been met. Detailed design calculations have been provided in Appendix E.

4.1.4 Standard Stormwater Management Practice Application

The portion of the water quality volume that is not reduced in the standard stormwater management practices with runoff reduction volume capacity can be credited toward meeting the total required water quality volume requirement. The total provided water quality-volume (total provided runoff-reduction volume plus total treated water quality volume) is greater than the total required water quality volume. Therefore, the total required water quality volume has been met. Detailed design calculations have been provided in Appendix E.

4.1.5 Volume and Peak Control Practice Application

The proposed stormwater management facilities have been designed and sized to provide channel protection, overbank flood control, and extreme flood protection. In addition, comparison of the peak discharge rates for pre- and post-development watershed conditions demonstrates that the peak rate of runoff from the proposed development are less than or equal to the existing conditions. Detailed design calculations have been provided in Appendix E.

4.2 Hydrologic Analysis

4.2.1 Drainage Patterns

In the existing conditions, a majority of the runoff from the project site flows into the stream. Runoff from the southern portion of the project site flows in a northerly direction into the drainage system on Gary Drive, which outlets into an offsite drainage ditch. Runoff from the northwestern portion of the project site flows overland in an easterly direction to an offsite drainage ditch. The stream and drainage ditch ultimately flows into the Pascack Brook.

In the proposed conditions, stormwater runoff will generally continue to flow overland in the same direction as in the existing conditions. Stormwater runoff within the roads, parking areas and driveways will be collected and directed to stormwater management facilities for treatment and controlled release. The collected stormwater will be detained and released in a controlled manner.

4.2.2 Stormwater Modeling

The USDA Soil Conservation Service Publication Technical Release (TR-55) "Urban Hydrology for Small Watersheds" has been used to analyze the pre- and post-development rainfall runoff rates and volumes. Watershed areas, curve numbers (CN), and times of concentration (T_C) were calculated for each contributing watershed. The curve number is a land-sensitive coefficient that dictates the relationship between total rainfall depth and direct storm runoff. Based on the land coverage and soil group types, the average CN has been determined for both the pervious and impervious area of each watershed for both the existing and proposed conditions.

The T_C is defined as the time for runoff to travel from the hydraulically most distant point in the watershed to a Design Point (DP). Values of the time of concentration were determined for both the pervious and impervious area of each watershed for both the existing and proposed conditions based on land cover and slope of the flow path using methods outlined in TR-55. As per TR-55, the minimum T_C used in 0.1 hours (for 6 minutes).

An overall watershed boundary was developed for the pre- and post-development conditions (see Figure 5 and Figure 6, respectively). The overall watershed was broken down into smaller watersheds, or subcatchments to allow for analysis of runoff conditions at several locations. Each of these locations is defined as a Design Point (DP) to compare the effects of the proposed development to the existing conditions. Descriptions of each of the selected design points are provided below:

- Design Point 1: existing stream headwall east of property line.
- Design Point 2: existing drainage structure under Loescher Lane (east).
- Design Point 3: existing drainage swale east of the northeast property corner.

Rainfall data used in the modeling and analysis was obtained from the isohyet maps provided in the *Design Manual* and the Northeast Regional Climate Center (NRCC). A Type III rainfall distribution was used to evaluate the pre- and post-development stormwater runoff conditions for the 1-, 2-, 10-, 25-, and 100-year 24-hour storm events. The rainfall data used in the stormwater management design and analysis is provided in the table below.

Table 4-4: Rainfall Data

Storm Event	24-Hour Rainfall[1]
90th Percentile[2]	1.50 inches
1-year	2.77 inches
2-year	3.38 inches
10-year	5.02 inches
25-year	6.29 inches
100-year	8.87 inches

1. The 90th percentile 24-hour rainfall value was taken from the *New York State Stormwater Management Design Manual*. The other 24-hour rainfall values are taken from NRCC.
2. The 90th percentile 24-hour rainfall amount was used to calculate the required total water quality volume.

The rainfall data used in the stormwater management design and analysis is provided in Appendix E. The results of the computer modeling used to analyze the pre- and post-development watershed conditions are provided in Appendix F and Appendix G, respectively.

4.2.3 Water Quality Control

Stormwater runoff from developed land is recognized as a significant contributor of pollution that can adversely affect the quality of the receiving waters. Treatment of stormwater runoff is important because most runoff-related water quality contaminants are transported during the initial stages of storms. The water quality volumes have been determined based on the methodology described in the Design Manual. The total water quality volume is provided in the table below.

Table 4-5: Total Water Quality Volume

Subcatchment	Area (ac)	Impervious Area (ac)	WQ_v (cf)
110	2.17	1.38	7,353
111	1.17	1.10	5,728
112	1.63	0.89	4,795
113	1.36	0.79	4,242
114	1.64	1.12	5,935
115	3.21	0.93	5,935
116	3.02	1.05	5,968
117	8.74	3.34	18,747
118	4.11	2.57	13,713
210	0.15	0.12	629
211	0.17	0.14	732
Total	**27.37**	**13.43**	**73,274**

Detailed design calculations have been provided in Appendix E.

4.2.4 Runoff Reduction Volume

Runoff reduction is achieved by infiltration, groundwater recharge, reuse, recycle, evaporation and evapotranspiration of 100 percent of the post-development water quality volumes to replicate pre-development hydrology by maintaining pre-construction infiltration, peak runoff flow, discharge volume, and minimizing concentrated flow by using runoff-control techniques to provide treatment in a distributed manner before runoff reaches the collection system. The runoff-reduction-volume techniques that were used to reduce the total required water quality volume are in the table below.

Table 4-6: Implemented Runoff Reduction Volume Techniques

Techniques/ Practices	RRv Reduction Method	Reduction Amount
Bioretention Practice	Standard SMP with RRv capacity	40% of WQv provided by practice (with underdrains)
Underground Infiltration Practice	Standard SMP with RRv capacity	100% of the WQv provided by practice(1)

1. Percolation and deep tests will be performed upon future submissions to verify assumptions.

After applying the runoff-reduction-volume techniques, the total required water quality volume was not reduced 100 percent. The minimum required runoff reduction volume was determined to verify that at least the minimum percent of the total water quality volume has been reduced. The total provided runoff reduction volume was greater than the minimum required runoff reduction volume. Therefore, the minimum required runoff-reduction volume has been met. Detailed design calculations have been provided in Appendix E.

4.2.5 Water Quantity Control

The proposed water quantity controls have been designed and sized to provide channel protection, overbank flood control, and extreme flood protection, where:

- Channel Protection Volume requirements are designed to protect stream channels from erosion. This protection is accomplished by providing 24-hour extended detention of the 1-year 24-hour storm.

- Overbank Flood Control requirements are designed to prevent an increase in the frequency and magnitude of out-of-bank flooding generated by urban development. Overbank flood control requires storage to attenuate the post-development 10-year, 24-hour peak discharge rate to pre-development rates.

- Extreme Flood Protection requirements are designed to prevent the increased risk of flood damage from large storms; maintain the boundaries of the pre-development 100-year floodplain; and protect the physical integrity of the stormwater management practices. Extreme flood control requires storage to attenuate the post-development 100-year, 24-hour peak discharge rate to pre-development rates.

A comparison of the required and provided water quantity controls is provided in the table below.

Table 4-7: Summary of Required & Provided Water Quantity Controls

Water Quantity Parameter	Required (cf)	Provided (cf)
Channel Protection Volume	170,087	217,490

Channel protection design calculations have been provided in Appendix E.

A comparison of the pre- and post-development peak discharge rates is provided in the table below.

Table 4-8: Summary of Pre- & Post-Development Peak Discharge Rates

Storm Event	Design Point	Pre (cfs)	Post (cfs)	Diff (cfs)
1-year	1	29.95	18.63	-11.32
	2	16.99	13.48	-3.51
	3	6.48	6.10	-0.38
2-year	1	43.48	34.08	-9.40
	2	25.34	19.64	-5.70
	3	9.52	8.85	-0.67
10-year	1	82.85	78.76	-4.09
	2	50.08	37.27	-12.81
	3	18.47	16.87	-1.60
25-year	1	115.30	111.73	-3.57
	2	70.38	51.50	-18.88
	3	25.77	23.36	-2.41
100-year	1	181.19	176.22	-4.97
	2	112.58	80.83	-31.75
	3	40.89	36.75	-4.14

Comparison of the peak discharge rates for pre- and post-development watershed conditions demonstrates that the peak rate of runoff from the proposed development will not be increased. Therefore, the proposed development will not adversely impact the downstream or adjacent properties, receiving water bodies or courses, or wetlands.

The pre- and post-development stormwater models have been provided in Appendix F and Appendix G, respectively.

4.3 Hydraulic Analysis

Stormwater runoff from the proposed development will be collected and conveyed to the proposed stormwater management facilities by a closed pipe-network system. A hydraulic analysis of the proposed stormwater collection system will be performed as the project progresses through the site plan approval process to verify that the system has the capacity to convey the stormwater runoff associated with the 25-year storm.

5 Erosion and Sediment Control Plan

This SWPPP and accompanying project plans identify erosion and sediment control measures to be implemented during and after construction to minimize erosion and sediment impacts. The erosion and sediment control measures have been designed in accordance with the *New York State Standards and Specifications for Erosion and Sediment Control*.

5.1 Construction Sequencing Schedule and Phasing

The project will be completed in phases and each phase will disturb a maximum of 5 acres. A construction sequencing and phasing plan will be developed as the project progresses through the site plan approval process.

5.2 Erosion and Sediment Control Measures

Temporary erosion and sediment control measures to be used during construction generally include the following:

- **Stabilized Construction Access** - Before construction, the stabilized construction access shall be installed to reduce the tracking of sediment onto adjacent roadways. Construction traffic must enter and exit the site at the stabilized construction access. The stabilized construction access shall be maintained in good condition to control tracking of sediment onto rights-of-way or streets. When necessary, the placement of additional aggregate atop the filter fabric shall be done to assure the minimum thickness is maintained. All sediments and soils spilled, dropped, or washed onto the public rights-of-way shall be removed immediately. Periodic inspection and needed maintenance shall be provided after each substantial rainfall event.

- **Dust Control** - Water trucks or other approved water source shall be used, as needed, during construction to reduce dust generated on the site. Dust control shall be provided by the general contractor to a degree acceptable to the owner/operator, and in compliance with the applicable local and state dust control requirements.

- **Temporary Soil Stockpile** - Materials, such as topsoil, shall be temporarily stockpiled (if necessary) on site during construction. Stockpiles shall be located away from storm drainage, water bodies or courses, and shall be properly protected from erosion in accordance the detail provided on the accompanying plans.

- **Silt Fencing** - Before initiation of and during construction, silt fencing shall be established along the perimeter of all areas to be disturbed as a result of the construction upgradient of water courses or adjacent properties. These barriers may extend into non-impact areas to ensure adequate protection of adjacent lands. Clearing and grubbing shall be performed only as necessary for the installation of the sediment control barrier. To ensure effectiveness of the silt fencing, daily inspections shall be performed by site personnel. Maintenance of the fence shall be performed as needed and when directed by the Qualified Inspector.

- **Temporary Seeding** - Within seven days after construction ceases on any particular area of the site, all disturbed areas where there shall be no construction for longer than 14 days shall be temporarily seeded and mulched to minimize erosion and sediment loss. Other stabilization methods maybe approved by the Qualified Inspector.

- **Inlet Protection** – Inlet protection shall be installed around existing and proposed catch basins (once installed) to keep sediment from entering the storm-sewer system. During construction, the inlet protection measures shall be replaced as needed to ensure proper function of the structure.

- **Check Dams** - Check dams shall be installed within drainage ditches to reduce the velocity of stormwater runoff, promote settling of sediment, and reduce sediment transport off site. The stone check dams shall be inspected at least every seven days. Damage shall be repaired upon discovery. If significant erosion has occurred between structures, a liner of stone or other suitable material shall be installed in that part of the

channel. Sediment accumulated behind the stone check dams shall be removed to allow the channel to drain through the stone check dam and prevent large flows from carrying sediment over or around the dam. Stones shall be replaced to maintain the design cross section of the structures.

- **Temporary Sediment Basins and Traps** - Temporary sediment basins and traps shall be constructed to intercept sediment laden runoff, reduce the amount of sediment leaving the disturbed areas, and protect drainage ways, properties, and rights-of-way. Projects that have proposed stormwater ponds can be used as temporary sediment basins during construction. Temporary sediment basins and traps shall be inspected at least every seven days. All damage caused by soil erosion and construction equipment shall be repaired upon discovery. Accumulated sediment shall be removed from the sediment basin or trap when it reaches 50 percent of the design capacity and must not exceed 50 percent. Sediment must not be placed downstream from the embankment, adjacent to a stream, or floodplain.

- **Fiber Rolls** – Fiber rolls shall be installed on the finished slopes 3:1 or steeper to reduce sheet flow on slopes help minimize erosion while final seeding and planting is underway.

- **Dewatering** - Dewatering, if required, must not be discharged directly into wetlands, water courses, water bodies, and storm sewer systems without appropriate protection. Proper methods and devices shall be used to the extent permitted by law, such as pumping water into temporary sediment basins, providing surge protection at the inlet and outlet of pumps, floating the intake of the pump, or other methods to minimize and retain the suspended solids.

Permanent erosion and sediment control measures to be used after construction generally include the following:

- **Establish Permanent Vegetation** - Disturbed areas not covered by impervious surfaces shall be seeded in accordance with the accompanying plans. The type of seed, mulch, and maintenance measures shall be followed. All areas at final grade shall be seeded and mulched within 14 days after completion of the major construction. All seeded areas shall be protected with mulch or hay. Final site stabilization is achieved when all soil-disturbing activities have been completed and a uniform, perennial vegetative cover with a density of 80 percent has been established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on all unpaved areas and areas not covered by permanent structures.

- **Rock Outlet Protection** - Rock outlet protection shall be installed at the locations as shown on the accompanying plans. The installation of rock outlet protection will reduce the depth, velocity, and energy of water, such that the flow will not erode the receiving water course or water body.

Specific erosion and sediment control measures, inspection frequency, and remediation procedures are provided in the subsequent sections and on the accompanying project plans.

5.3 Pollution Prevention Controls

Good housekeeping practices are designed to maintain a clean and orderly work environment. Good housekeeping measures shall be maintained throughout the construction process by those parties involved with the direct care and development of the site. The following measures shall be implemented to control the possible exposure of harmful substances and materials to stormwater runoff:

1. Material resulting from the clearing and grubbing operation shall be stockpiled away from storm drainage, water bodies or watercourses and surrounded with adequate erosion and sediment control measures. Soil stockpile locations shall be exposed no longer than 14 days before seeding.

2. Equipment maintenance areas shall be protected from stormwater flows and shall be supplied with appropriate waste receptacles for spent chemicals, solvents, oils, greases, gasoline, and any pollutants that might contaminate the surrounding habitat or water supply. Equipment wash-down zones shall be within areas draining to sediment control devices.

3. The use of detergents for large-scale (e.g., vehicles, buildings, pavement surfaces) washing is prohibited.

4. Material storage locations and facilities (e.g., covered storage areas, storage sheds) shall be on-site and shall be stored according to the manufacturer's standards in a dedicated staging area. Chemicals, paints, solvents, fertilizers, and other toxic material shall be stored in waterproof containers. Runoff containing such materials shall be collected, removed from the site, treated and disposed of at an approved solid waste or chemical disposal facility.

5. Hazardous spills shall be immediately contained to prevent pollutants from entering the surrounding habitat or water supply. Spill Kits shall be provided on site and shall be displayed in a prominent location for ease of access and use. Spills greater than 5 gallons shall be reported to the NYSDEC Response Unit at 1-800-457-7362. In addition, a record of the incidents or notifications shall be documented and attached to the SWPPP.

6. Portable sanitary waste facilities shall be provided on site for workers and shall be properly maintained.

7. Dumpsters or debris containers shall be on site and shall be of adequate size to manage respective materials. Regular collection and disposal of wastes must occur as required.

8. Temporary concrete washout facilities shall be a minimum of 50 feet from storm drain inlets, open drainage facilities, and watercourses. Each facility should be away from construction traffic or access areas to prevent disturbance or tracking. A sign shall be installed adjacent to each washout facility to inform concrete equipment operators to use the proper facilities. When temporary concrete washout facilities are no longer required for the work, the hardened concrete shall be removed and disposed of. Materials used to construct the temporary concrete washout facilities shall be removed

and disposed of. Holes, depressions or other ground disturbance caused by the removal of the temporary concrete washout facilities shall be backfilled or repaired, seeded, and mulched for final stabilization. Wastewater discharges from washout of concrete is prohibited.

9. Non-stormwater components of site discharge shall be clean water. Water used for construction, which discharges from the site, must originate from a public water supply or approved private well. Water used for construction that does not originate from an approved public supply must not discharge from the site.

10. Discharges from dewatering activities, including discharges from dewatering trenches and excavations, shall be managed by appropriate control measures.

11. Wastewater discharges from washout and cleanout of stucco, paint, form-release oils, curing compounds, and other construction materials is prohibited.

5.4 Soil Stabilization and Restoration

5.4.1 Stabilization

In areas where soil disturbance has temporarily or permanently ceased, the application of soil stabilization measures shall be initiated by the end of the next business day and completed within 14 days from the date the current soil disturbance ceased. The soil-stabilization measures shall be in conformance with the *New York State Standards and Specifications for Erosion and Sediment Control*, latest edition.

For construction sites that directly discharge to a 303(d) segment or within one of the watersheds listed in Appendix C of General Permit, the application of soil-stabilization measures shall be initiated by the end of the next business day and completed within seven days from the date the current soil disturbance ceased. The soil-stabilization measures shall be in conformance with the *New York State Standards and Specifications for Erosion and Sediment Control*, latest edition.

5.4.2 Restoration

Soil restoration shall be performed in the disturbed areas. The soils shall be restored in accordance with the table below.

Table 5-1: Soil Restoration

Type of Soil Disturbance	Soil Restoration Requirement
No Soil Disturbance (e.g., preservation of natural features)	Restoration not required.
Minimal Soil Disturbance (e.g., clearing and grubbing)	Restoration not required.
Areas where top soil is stripped only (e.g., no change in grade)	Aerate and apply 6 inches of topsoil
Areas of cut or fill	Apply full soil restoration
Heavy traffic areas on site (especially in 5 to 25 feet around buildings, but not within a 5-foot perimeter around foundation walls)	Apply full soil restoration (see below).
Areas where runoff reduction or infiltration practices are applied	Restoration not required, but can be applied to enhance soil infiltration.

Full Soil Restoration

Before applying full soil restoration, all construction, including construction equipment and material storage, site cleanup and trafficking, should be finished and the site closed to further disturbance. Full soil restoration is implemented in a two-phase process:

1. Deep rip the affected thickness of exposed subsoil, aggressively fracturing it before the protected topsoil is reapplied on the site.

2. Decompact simultaneously through the restored topsoil layer and upper half of the affected subsoil.

Low to Moderate Subsoil Moisture

The disturbed soils are returned to rough grade and the following is applied:

1. Apply 3 inches of compost over the subsoil.

2. Till compost a minimum of 12 inches into the subsoil using a cat-mounted ripper, tractor-mounted disc, or tiller mixing and circulating air and compost into subsoils.

3. Rock-pick until uplifted stone and rock of 4 inches or larger size are cleaned off the site. All construction material and foreign debris and existing root masses shall be removed from proposed planting areas.

4. Apply 6 inches of topsoil. Newly installed planting soils shall be mixed with existing soils where they meet in order to create a transitional gradient to allow for proper drainage.

5. Install plants and vegetation in accordance with the Landscaping Plan.

6 Stormwater Pollution Prevention Plan Implementation

6.1 Certification Statements

Before starting construction, the owner/operator, contractors, and subcontractors are required to sign the certification statements provided in Appendix C.

The owner/operator must sign a copy of the Owner's/Operator's certification before submitting the Notice of Intent. The owner/operator acknowledges that the SWPPP has been developed and will be implemented as the first element of construction and agrees to comply with all the terms and conditions of the general permit for which the Notice of Intent is being submitted.

The owner/operator must identify the contractors and subcontractors that will be responsible for installing, constructing, repairing, replacing, inspecting, and maintaining the erosion and sediment control practices; and constructing the post-construction stormwater management practices included in the SWPPP. The contractors and subcontractors must identify at least one trained individual from their company who will be responsible for implementation of the SWPPP. This person will be known as the trained contractor. At least one trained contractor will be on site daily when soil disturbing activities are being performed. If new or additional contractors are hired to implement measures identified in the SWPPP after construction has begun, they must also sign the certification statement and identify their responsibilities.

6.2 Pre-Construction Meeting

Before beginning construction, the owner/operator must set up a pre-construction meeting with the Village representative, qualified professional, qualified inspector, contractors, and subcontractors. The primary purpose of the pre-construction meeting is to discuss the responsibilities of each party as they relate to the implementation of the SWPPP and to clarify any questions.

6.3 Construction Site Log

The owner/operator must maintain a copy of the following, including but not limited to: General Permit, signed NOI, signed MS4 Acceptance form, NOI Acknowledgement Letter, SWPPP, signed certification statements, and inspections reports. The documents must be maintained in a secure location. The secure location must be accessible during normal business hours to an individual performing a compliance inspection.

6.4 Construction Inspections and Maintenance

6.4.1 Contractor Maintenance Inspection Requirements

The trained contractor must inspect the erosion and sediment control practices and pollution-prevention measures to ensure that they are being maintained in effective operating condition at all times. The inspections will be conducted as follows:

- For construction sites where soil disturbance is on-going, the trained contractor must inspect the measures within the active work area daily. If deficiencies are identified, the

contractor will begin implementing corrective actions within one business day and must complete the corrective actions by the end of the day.

- For construction sites where soil disturbance activities have been temporarily suspended (e.g., winter shutdown) and temporary stabilization measures have been applied to all disturbed areas, the trained contractor can stop conducting the maintenance inspections. The trained contractor must resume conducting the daily maintenance inspections as soil disturbance resumes.

- For construction sites where soil disturbance has been shut down with partial project completion, the trained contractor can stop conducting the maintenance inspections if all areas disturbed as of the project shutdown date have achieved final stabilization and all post-construction stormwater management practices required for the completed part of the project have been constructed in conformance with the SWPPP and are operational.

6.4.2 Qualified Inspector Inspection Requirements

The owner/operator must have a Qualified Inspector conduct site inspections to ensure the stability and effectiveness of all protective measures and practices employed during construction. The site inspections will be conducted as follows:

- For construction sites where soil disturbance is ongoing, the Qualified Inspector must conduct a site inspection at least once every seven days.

- For construction sites that directly discharge to a 303(d) segment or within one of the watersheds listed in Appendix C of the SPDES General Permit, the Qualified Inspector must conduct at least two site inspections every seven days. The two inspections shall be separated by a minimum of two days.

- For construction sites where soil disturbance activities have been temporarily suspended (e.g., winter shutdown) and temporary stabilization measures have been applied to all disturbed areas, the Qualified Inspector must conduct a site inspection at least once every 30 days. The owner/operator must notify the NYSDEC or MS4 in writing before reducing the frequency of the inspections.

- For construction sites where soil disturbance activities have been shut down with partial project completion, the Qualified Inspector can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved final stabilization and all post-construction stormwater management practices are operational. The owner/operator must notify the NYSDEC or the MS4 in writing before the shutdown.

All inspections shall be performed in accordance with this SWPPP, accompanying project plans, latest revision of *New York State Standards and Specifications for Erosion and Sediment Control,* and procedures outlined in Appendix H of the latest revision of the *Design Manual*. Inspection reports must identify and document the maintenance of the erosion and sediment control measures. A Example inspection report has been provided in Appendix D.

Specific maintenance components, schedule frequency, inspection parameters and remediation procedures are provided on the accompanying project plans. Any adjustments or modifications to the maintenance plan shall be noted in the inspection reports and submitted to the Village for approval.

7 Termination of Coverage

The owner/operator may terminate coverage when:

a. Total project completion has occurred.

b. A planned shutdown with partial project completion has occurred.

c. Property ownership changes or when there is a change in operational control over the construction plans and specifications; and the new owner/operator has obtained coverage under the SPDES General Permit.

d. Coverage under an alternative SPDES general permit or an individual SPDES permit has been obtained.

If a planned shutdown with partial project completion or total project completion has occurred, then the owner/operator must have the Qualified Inspector perform a final site inspection to ensure that the following have been met:

- **Planned Shutdown with Partial Project Completion** – all soil disturbance has ceased; and all areas disturbed as of the project shutdown date have achieved final stabilization; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices required for the completed part of the project have been constructed in conformance with the SWPPP and are operational.

- **Total Project Completion** – all construction activity has been completed; and all areas disturbed as of the project shutdown date have achieved final stabilization; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices required for the completed part of the project have been constructed in conformance with the SWPPP and are operational.

The completed NOT must be submitted to the NYSDEC to cancel coverage. A blank copy of the NOT has been provided in Appendix B.

8 Post-Construction Requirements

8.1 Record Retention

Following construction, the owner/operator must retain a copy of the signed NOI, signed MS4 SWPPP Acceptance, NOI Acknowledgement Letter, SWPPP, project plans, and any inspection

reports that were prepared in conjunction with the General Permit for at least five years from the date that the NYSDEC receives a complete NOT.

8.2 Inspection and Maintenance

Post-construction inspections and maintenance will be performed by Home Owners Associated. Inspections and maintenance for the various site components and stormwater management facilities shall be performed in accordance with the accompanying project plans and this SWPPP. Detailed post-construction inspections and maintenance procedures are provided in Appendix H.

9 Conclusion

This Stormwater Pollution Prevention Plan for Equestrian Estates has been developed in accordance with the requirements of the Village of Chestnut Ridge and the New York State Department of Environmental Conservation (NYSDEC) State Pollutant Discharge Elimination System (SPDES) Phase II technical standards. This SWPPP identifies the erosion control, sediment control, pollution-prevention, and stormwater management measures to be implemented during construction to minimize soil erosion and control sediment transport off site, and after construction to control and treat stormwater runoff from the developed site.

In the opinion of the SWPPP preparer, the proposed project will not have adverse impacts if the measures for erosion control, sediment control, pollution prevention, and stormwater management measures are properly constructed and maintained in accordance with the requirements outlined herein and on the accompanying project plans.

Figures

Esri, HERE, Garmin, © OpenStreetMap contributors, and the GIS user community, Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

LANGAN

707 Westchester Avenue, Suite 304
White Plains, NY 10604
T: 914.323.7400 F: 914.323.7401 www.langan.com

Langan Engineering & Environmental Services, Inc.
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
Langan International
Collectively known as Langan

NJ CERTIFICATE OF AUTHORIZATION No. 24GA27996400

Project

Equestrian Estates

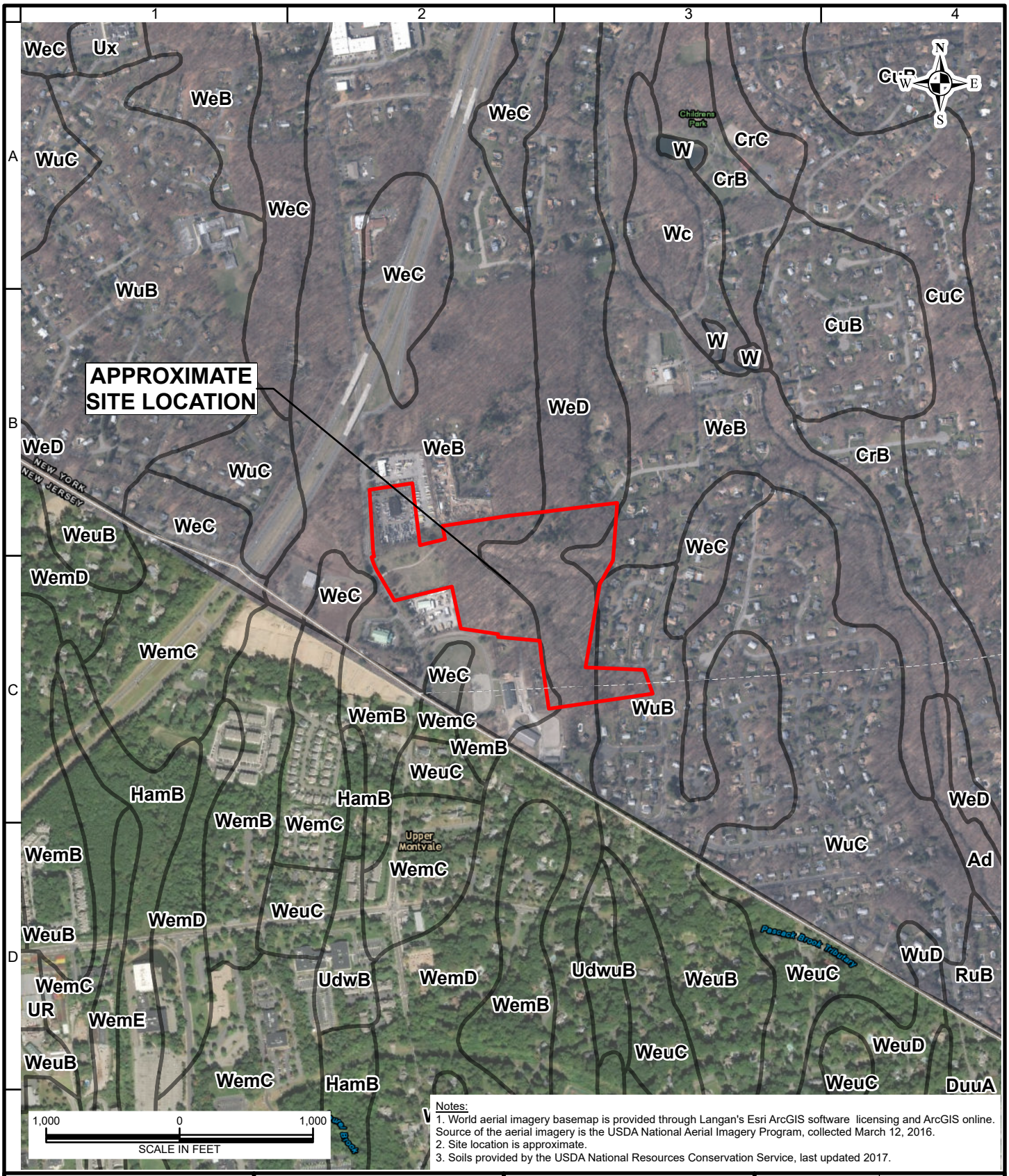
VILLAGE OF CHESTNUT RIDGE

ROCKLAND COUNTY NEW YORK

Site Location Map

Spatial Reference: NAD 1983 StatePlane New York Long Island FIPS 3104 Feet

Project No. 190044901	Figure FG01
Date 8/8/2018	
Scale 1:1,000	
Drawn By Site Analyzer	
Submission Date 08/17/2018	Sheet 1 of 1



Notes:
1. World aerial imagery basemap is provided through Langan's Esri ArcGIS software licensing and ArcGIS online. Source of the aerial imagery is the USDA National Aerial Imagery Program, collected March 12, 2016.
2. Site location is approximate.
3. Soils provided by the USDA National Resources Conservation Service, last updated 2017.

LANGAN
707 Westchester Avenue, Suite 304
White Plains, NY 10604
T: 914.323.7400 F: 914.323.7401 www.langan.com

Langan Engineering & Environmental Services, Inc.
Langan Engineering, Environmental, Surveying, Landscape Architecture, and Geology, D.P.C.
Langan International LLC

Collectively known as Langan

Project
Equestrian Estates
VILLAGE OF CHESTNUT RIDGE
ROCKLAND COUNTY NEW YORK

Drawing Title
SOILS MAP

Project No.	190044901
Date	8/8/2018
Scale	1"=1,000'
Drawn By	AB
Submission Date	08/17/2018

Figure
FG02
Sheet 1 of 1

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

LANGAN

707 Westchester Avenue, Suite 304
White Plains, NY 10604
T: 914.323.7400 F: 914.323.7401 www.langan.com

Langan Engineering & Environmental Services, Inc.
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
Langan International
Collectively known as Langan

NJ CERTIFICATE OF AUTHORIZATION No. 24GA27996400

Project

Equestrian Estates

VILLAGE OF CHESTNUT RIDGE

ROCKLAND COUNTY NEW YORK

Flood Insurance Rate Map

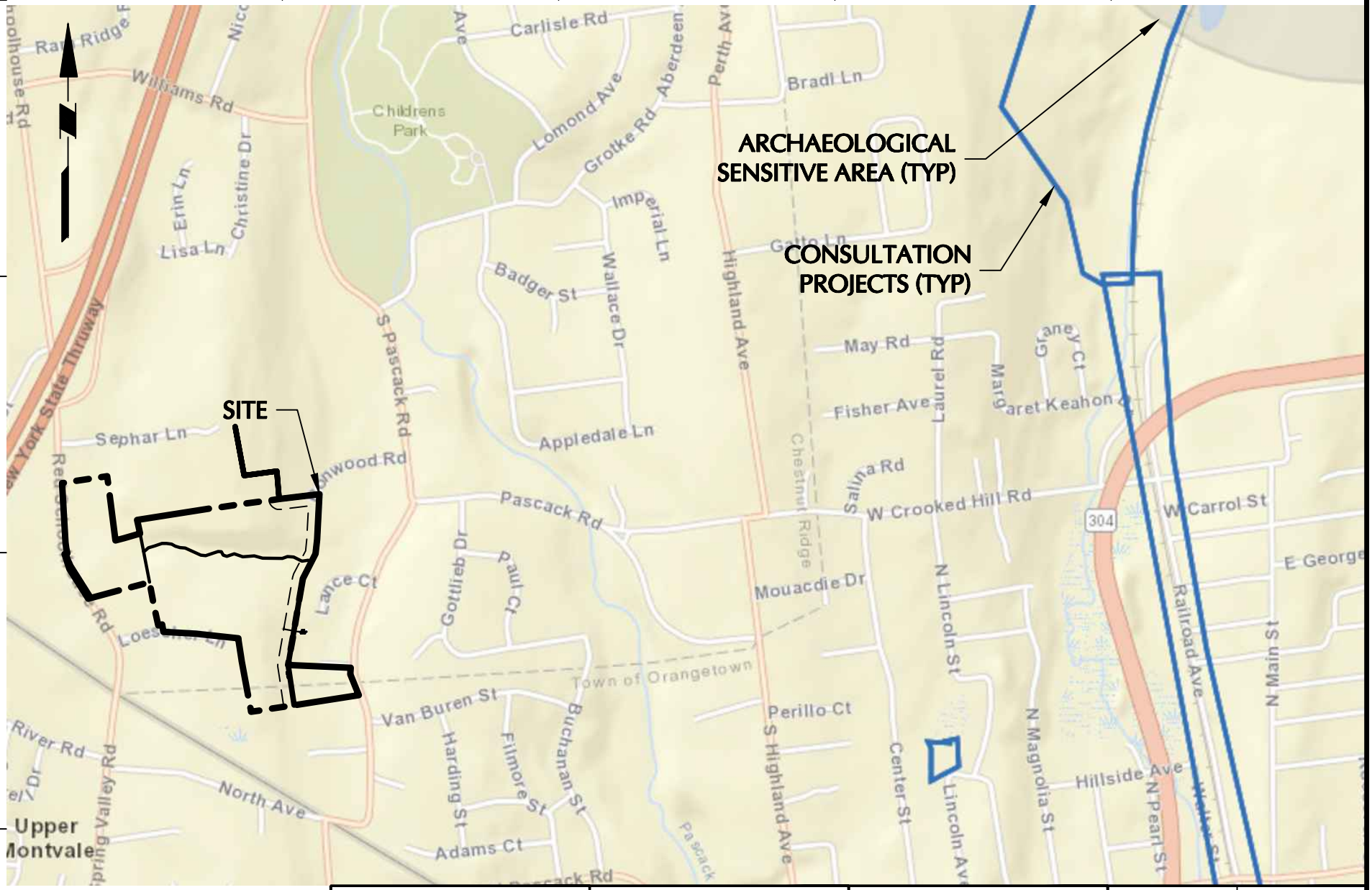
Spatial Reference: NAD 1983 StatePlane New York Long Island FIPS 3104 Feet

Project No.	190044901
Date	8/8/2018
Scale	1:1,000
Drawn By	Site Analyzer
Submission Date	08/17/2018

Figure

FG03

Sheet 1 of 1



LANGAN

Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.

One North Broadway, Suite 910
White Plains, NY 10601

T: 914.323.7400 F: 914.323.7401 www.langan.com

Project

EQUESTRIAN ESTATES

RED SCHOOLHOUSE ROAD
68.09-2-9, 10, 11, 12 & 22, 68.13-1-6
VILLAGE OF CHESTNUT RIDGE
ROCKLAND COUNTY NEW YORK

Drawing Title

CULTURAL RESOURCES

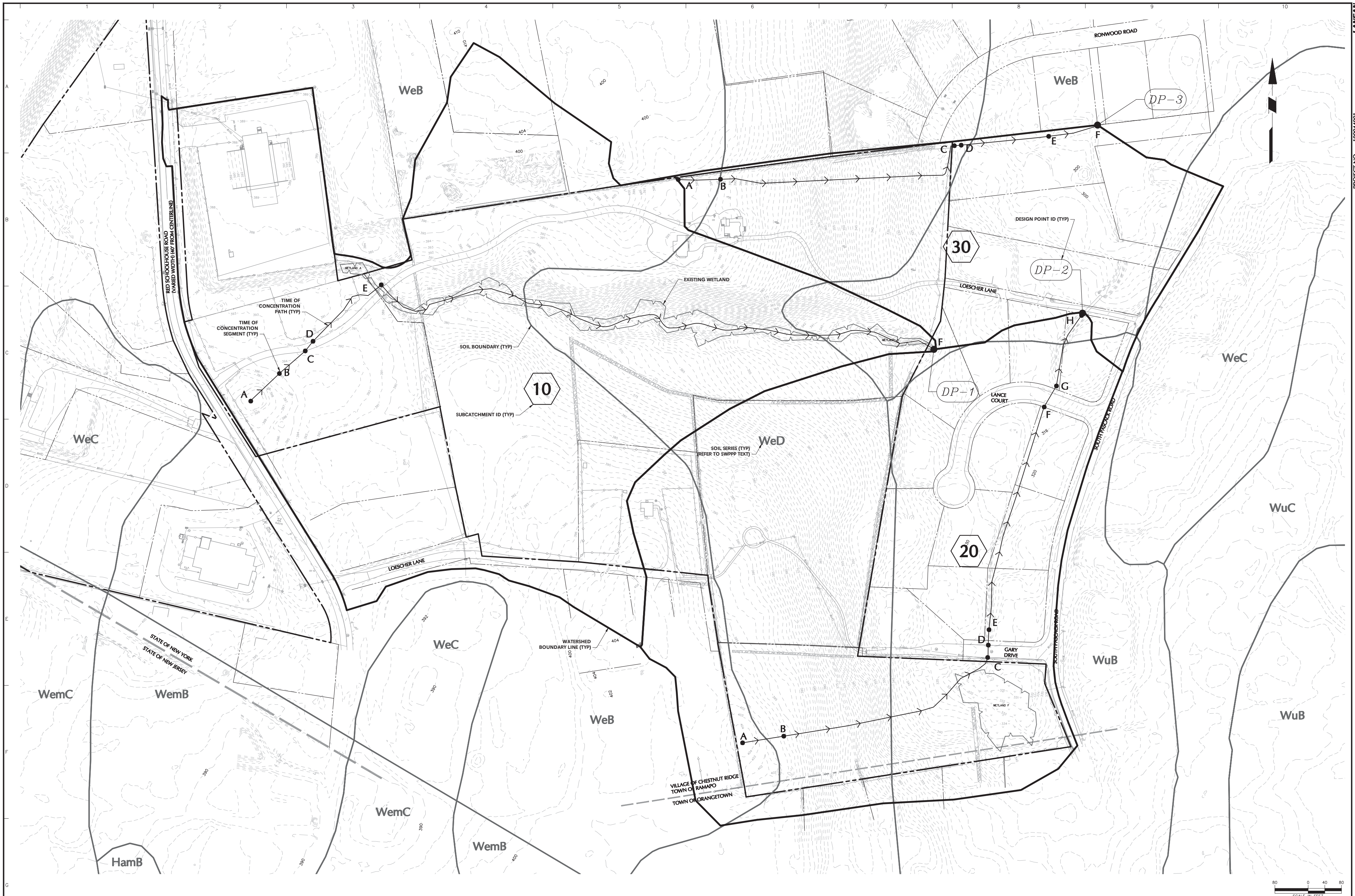
Project No.	190044901
Date	08/17/2018
Drawn By	CZ
Checked By	MF

Drawing No.

FG04

Sheet 1 of 1

Filename: \\langan.com\data\WPW\data9\190044901\Project Data\CAD\01\SheetFiles\Figures\FG04-190044901-CA101-0101.dwg Date: 12/8/2020 Time: 02:10 User: jmacalintal Style Table: Langan.stb Layout: Cultural Resources



Date	Description	No.
12/08/20	REV. PER UPDATED SITE LAYOUT	1

REVISIONS

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
One North Broadway, Suite 910
White Plains, NY 10601
T: 914.323.7400 F: 914.323.7401 www.langan.com

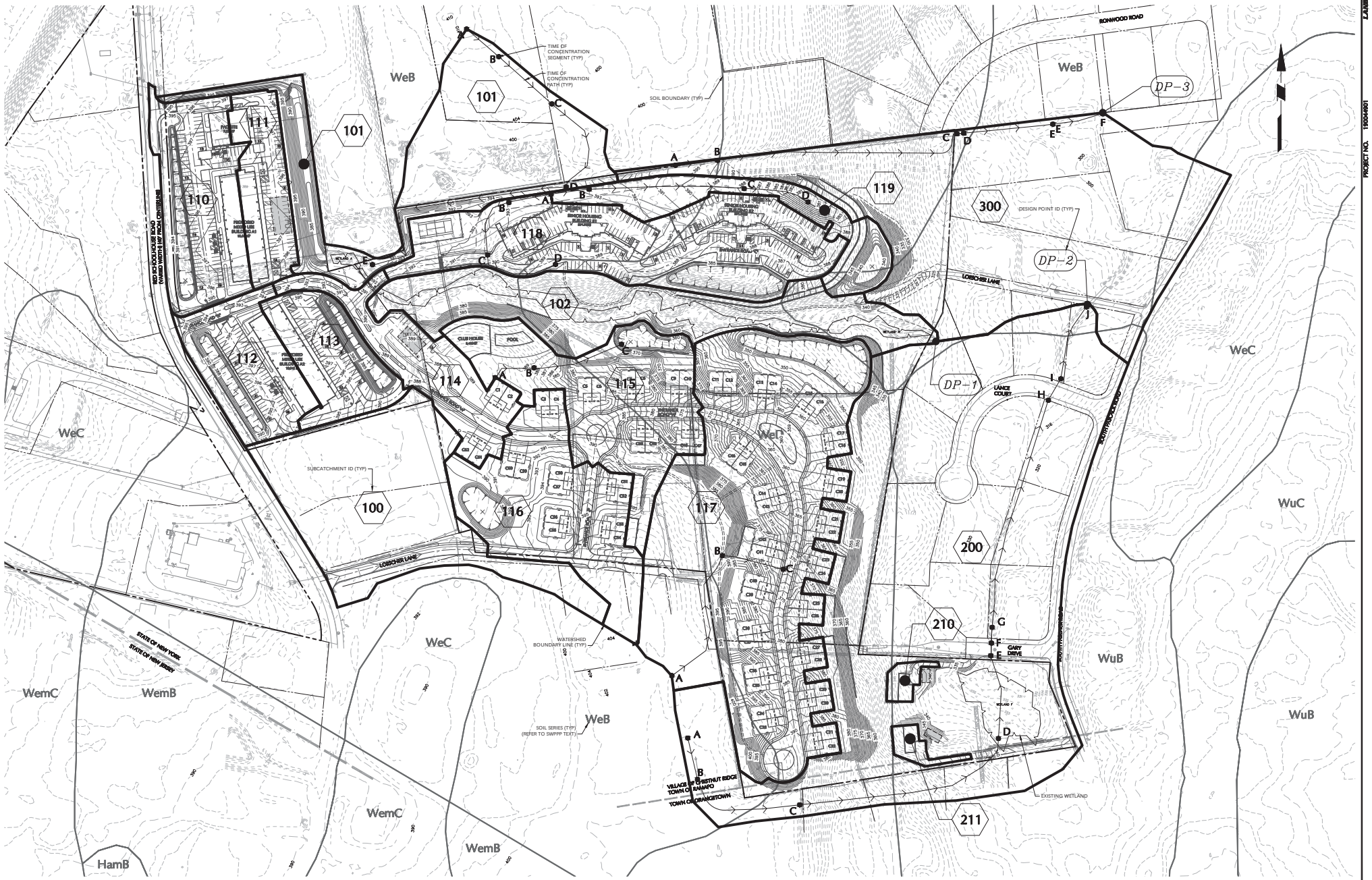
Project
EQUESTRIAN ESTATES
RED SCHOOLHOUSE ROAD
68.09-2-9, 10, 11, 12 & 22, 68.13-1-6
VILLAGE OF CHESTNUT RIDGE
ROCKLAND COUNTY NEW YORK

Drawing Title
PRE DEVELOPMENT WATERSHED MAP

Project No. 190044901
Date 09/10/2018
Drawn By LM
Checked By CZ

Drawing No. FG05
Sheet 1 of 1

Filename: \\langan.com\data\WPW\data9\190044901\Project Data\CAD\01\SheetFiles\Figures\FG05-190044901-CA101-0101.dwg Date: 12/8/2020 Time: 02:08 User: jmacalintal Style Table: Langan.stb Layout: Pre Development Watershed Analysis



SCALE IN FEET

Date	Description	No.
12/08/20	REV. PER UPDATED SITE LAYOUT	1

REVISIONS

LANGAN

Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
One North Broadway, Suite 910
White Plains, NY 10601
T: 914.323.7400 F: 914.323.7401 www.langan.com

Project
EQUESTRIAN ESTATES
RED SCHOOLHOUSE ROAD
68.09-2-9, 10, 11, 12 & 22, 68.13-1-6
VILLAGE OF CHESTNUT RIDGE
ROCKLAND COUNTY NEW YORK

Drawing Title
POST DEVELOPMENT WATERSHED MAP

Project No.	190044901
Date	09/10/2018
Drawn By	PR
Checked By	CZ
Drawing No.	FG06
Sheet	1 of 1

File Name: \langan.com\data\WP\Data\190044901\Project Data\CAD\01\Sheet Files\Figures\FG06-190044901-CA101-0101.dwg Date: 12/8/2020 Time: 14:56 User: jmacaluso Style Table: Langan.stb Layout: Post Development Watershed Analysis

PROJECT NO. 190044901